

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMININGRec'd PCT/PTO 25 MAY 2005
PCT

To:

LEE, Young Pil

The Cheonghwa Building 1571-18 Seocho-dong, Seocho-gu,
Seoul 137-874, Republic of KoreaNOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
EXAMINATION REPORT

(PCT Rule 71.1)

Date of mailing
(day/month/year) 02 MARCH 2005 (02.03.2005)

Applicant's or agent's file reference

JL-2002-PCT

IMPORTANT NOTIFICATION

International application No.

PCT/KR2003/002552

International filing date (day/month/year)

25 NOVEMBER 2003 (25.11.2003)

Priority date (day/months/year)

26 NOVEMBER 2002 (26.11.2002)

Applicant

CJ CORPORATION et al

1. The applicant is hereby notified that International Preliminary Examining Authority transmits here with the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**
The applicant must enter the national phase before each elected office by performing certain acts (filing translations and paying national fees) within 3 month(s) from the priority date (or later in some Offices) (Article 3(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/3(1)).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details in the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/KR

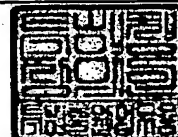
Korean Intellectual Property Office
00 Dunsan-dong, Seo-gu, Daejeon 302-701,
Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

COMMISSIONER

Telephone No. 82-42-481-5131

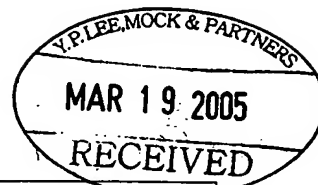


PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)



Applicant's or agent's file reference JL-20992-PCT	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/KR2003/002552	International filing date (day/month/year) 25 NOVEMBER 2003 (25.11.2003)	Priority date (day/month/year) 26 NOVEMBER 2002 (26.11.2002)
International Patent Classification (IPC) or national classification and IPC IPC7 C07D 409/04		
Applicant CJ CORPORATION et al		

1.	This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2.	<p>This REPORT consists of <u>4</u> sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of <u> </u> sheets.</p>
3.	<p>This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p>

Date of submission of the demand 18 JUNE 2004 (18.06.2004)	Date of completion of this report 28 FEBRUARY 2005 (28.02.2005)
Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea	Authorized officer LEE, Mi Jeong
Facsimile No. 82-42-472-7140	Telephone No. 82-42-481-5601

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/KR2003/002552

1. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed
- ☐ the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the claims:
pages _____, as originally filed
pages _____, as amended (together with any statement) under Article 19
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the drawings:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language English which is

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☒ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION

International application No.

PCT/KR2003/002552

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1 - 9	YES
	Claims		NO
Inventive step (IS)	Claims	1 - 9	YES
	Claims		NO
Industrial applicability (IA)	Claims	1 - 9	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

The following documents are referred to in this report:

D1: WO 01/09118 A2 (8 Feb. 2001)

D2: US 4110450 (29 Aug 1978)

1. Novelty

Claims 1-9 of the present invention relate to a method for preparing oltipraz, comprising reacting methyl 2-methyl-3-(pyrazin-2-yl)-3-oxopropionate with phosphorus pentasulfide in the presence of a mixed solvent of toluene and xylene under reflux to produce an oltipraz crude crystal. The said methyl 2-methyl-3-(pyrazin-2-yl)-3-oxopropionate is prepared by a condensation reaction of methyl pyrazine-2-carboxylate and methyl propionate in the presence of a strong base such as potassium-t-butoxide.

Example 7 of D1 discloses a method for preparing oltipraz comprising three steps of reaction schemes, which is very similar to the present invention. However, D1 differs from the present invention in that sodium hydride is used as a base in a condensation reaction of methyl pyrazine-2-carboxylate and methyl propionate.

D2 also discloses a method for preparing oltipraz. However, the early reaction scheme to make methyl 2-methyl-3-(pyrazin-2-yl)-3-oxopropionate in D2 is different from the corresponding reaction scheme in the present invention.

Therefore, claims 1-9 of the present invention are considered to be novel over D1 and D2 [Article 33(2) PCT].

2. Inventive Step

D1 seems to be the closest prior art to the present invention since the reaction schemes of D1 and the present invention are almost same. But, there is an explosion risk of hydrogen produced during the condensation reaction since sodium hydride is used as a base in D1. Furthermore, since sodium hydride dispersed in oil is used in D1, a pretreatment for oil removal is required.

(Continued on Supplemental Sheet.)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

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Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of:

Box V.

Therefore, the inventive step of claims 1-9 in the present invention can be acknowledged over D1 and D2 [Article 33(3) PCT].

3. Industrial Applicability

The subject-matter of claims 1-9 appears to be industrially applicable [Article 33(4) PCT].